

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**Factor completely.**

1) $t^2 - 18t + 80$ A) $(t + 8)(t + 10)$ B) $(t - 40)(t - 2)$ C) $(t - 8)(t - 10)$ D) Prime 1) _____

2) $2st^2 + 4st - 30s$ A) $(2st + 6)(t - 5s)$ B) $s(2t + 6)(t - 5)$ 2) _____
C) $2s(t + 3)(t - 5)$ D) $2s(t - 3)(t + 5)$

3) $7x^2 + 58x - 45$ A) $(7x - 50)(7x - 5)$ B) $(x + 9)(7x - 5)$ 3) _____
C) $(7x + 9)(x - 5)$ D) $(x - 9)(7x - 5)$

Factor using substitution.

4) $9x^4 - 43x^2 + 28$ A) $(9x^2 + 21)(9x^2 - 7)$ B) $(x^2 + 4)(9x^2 - 7)$ 4) _____
C) $(x^2 - 4)(9x^2 - 7)$ D) $(7 - 9x^2)(9x^2 - 7)$

Factor the perfect square.

5) $x^2 + 40x + 400$ A) $(x - 20)^2$ B) $(x + 20)(x - 20)$ 5) _____
C) $(x + 20)^2$ D) Prime

Factor the difference of squares.

6) $25a^2 - b^2$ A) $(a + 5b)(a - 5b)$ B) $(5a - b)^2$ 6) _____
C) $(5ab + 1)(5ab - 1)$ D) $(5a + b)(5a - b)$

Factor the difference of cubes.

7) $x^3 - 1000$ A) $(x + 10)(x^2 - 10x + 100)$ B) $(x - 10)(x^2 + 10x + 100)$ 7) _____
C) $(x - 10)^3$ D) Prime

Factor the sum of cubes.

8) $x^3 + t^3$ A) $(x + t)(x^2 - xt + t^2)$ B) $(x + t)(x^2 - xt + t^2)$ 8) _____
C) $(x - t)(x^2 - xt + t^2)$ D) $(x + t)(x^2 + t^2)$

Factor completely.

9) $2a^3 + 4a^2 - 2ab^2 - 4b^2$

A) $(a + b)(a - b)(2a + 4)$

C) $(a^2 + b^2)(2a - 4)$

B) $(a - b)^2(2a + 4)$

D) $(a - b)(2a^2 + 4b^2)$

9) _____

Solve.

10) $(x + 4)(x - 2)(x - 14) = 0$

A) 0, -4, 2

B) -4, 2, -14

C) 4, 2, 14

D) -4, 2, 14

10) _____

11) $x^2 - x - 30 = 0$

A) 1, 30

B) -5, -6

C) -5, 6

D) 5, 6

11) _____

12) $y^2 + 7y = -10$

A) 5, 2

B) -2, 5

C) 2, -5

D) -2, -5

12) _____

13) $x^3 + 5x^2 - 24x = 0$

A) 0, 3, 8

B) 0, -8

C) 8, -3

D) -8, 0, 3

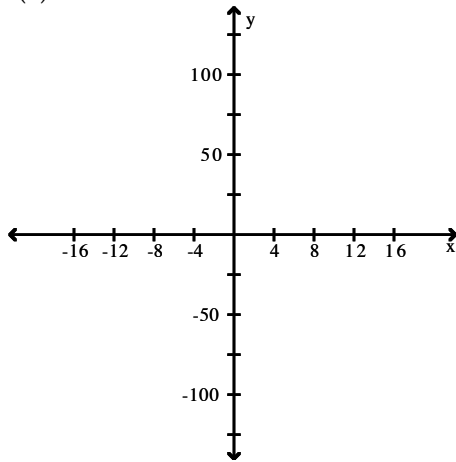
13) _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Find the x-intercepts and then sketch the graph.

14) $f(x) = x^2 + 2x - 63$

14) _____



MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Simplify the rational expression.

15) $\frac{y^2 + 2y - 24}{y^2 + 3y - 28}$

15) _____

A) $\frac{2y - 6}{3y - 7}$

B) $\frac{2y - 24}{3y - 28}$

C) $-\frac{y^2 + 2y - 24}{y^2 + 3y - 28}$

D) $\frac{y + 6}{y + 7}$

Find the product.

16) $\frac{z^2 + 18z + 81}{z^2 - 64} \cdot \frac{z^2 - 8z}{z + 9}$ 16) _____

A) $\frac{z(z+9)}{z-8}$

B) $\frac{z(z+9)}{z+8}$

C) $\frac{z}{z-8}$

D) $\frac{(z+9)}{z+8}$

Find the quotient.

17) $\frac{x^2 - 16}{x^2 - 6x + 9} \div \frac{8x + 32}{x^2 - 5x + 6}$ 17) _____

A) $\frac{x-3}{(x-4)(x-2)}$

B) $\frac{(x-4)(x-2)}{x-3}$

C) $\frac{(x-4)(x-2)}{8(x-3)}$

D) $\frac{(x+4)(x+2)}{8(x+3)}$

Find the indicated value of the given function.

18) $h(x) = \frac{x^2 - x + 16}{x^2 - 2x - 24}$, $h(6)$ 18) _____

A) $\frac{16}{37}$

B) 0

C) 16

D) Undefined

19) $f(x) = \frac{9x - 4}{9x^2 - 6x - 8}$, $f(-4)$ 19) _____

A) $-\frac{5}{16}$

B) $-\frac{1}{5}$

C) $-\frac{1}{4}$

D) $\frac{1}{5}$

Add or subtract. Simplify your answer to lowest terms.

20) $\frac{y+4}{y-3} + \frac{y-1}{y+4}$ 20) _____

A) $\frac{2y+3}{2y+1}$

B) $\frac{2y+3}{(y-3)(y+4)}$

C) $\frac{2y^2+19}{(y-3)(y+4)}$

D) $\frac{2y^2+4y+19}{(y-3)(y+4)}$

Simplify the complex fraction.

21) $\frac{1 - \frac{10}{x}}{1 + \frac{10}{x}}$ 21) _____

A) $\frac{10-x}{10+x}$

B) $-\frac{9}{11}$

C) -1

D) $\frac{x-10}{x+10}$

$$22) \frac{q + \frac{5}{q-4}}{2 - \frac{5}{q-4}} \qquad 22) \underline{\hspace{2cm}}$$

A) $\frac{q^2 - 4q + 5}{2q - 3}$

B) $\frac{q + 5}{2q - 5}$

C) $\frac{q^2 - 4q + 5}{2q - 13}$

D) $\frac{q + 5}{2q - 13}$

Solve.

$$23) \frac{1}{x-4} + \frac{1}{4x-16} = \frac{5}{4} \qquad 23) \underline{\hspace{2cm}}$$

A) 5

B) 25

C) -3

D) 1

24) Martha can rake the leaves in her yard in 3 hours. Her younger brother can do the job in 7 hours. How long will it take them to do the job if they work together? 24)

A) $\frac{10}{21}$ hr

B) $\frac{21}{4}$ hr

C) 7 hr

D) $\frac{21}{10}$ hr

25) If y varies jointly with x and z and inversely with n and y = 49 when x = 4, z = 7, and n = 8, find y when x = 7, z = 4, and n = 8. 25)

A) $\frac{49}{2}$

B) 98

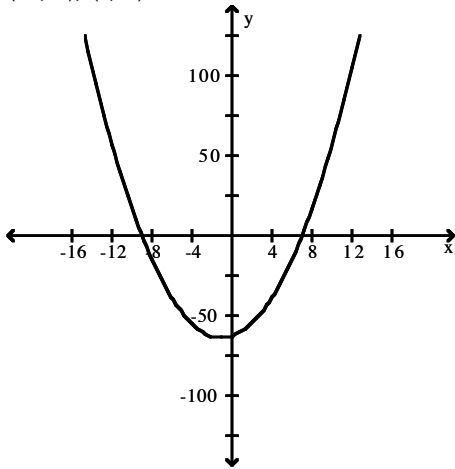
C) 49

D) 28

Answer Key

Testname: MATH116UNIT3REVIEW

- 1) C
- 2) D
- 3) B
- 4) C
- 5) C
- 6) D
- 7) B
- 8) B
- 9) A
- 10) D
- 11) C
- 12) D
- 13) D
- 14) $(-9, 0), (7, 0)$



- 15) D
- 16) B
- 17) C
- 18) D
- 19) C
- 20) D
- 21) D
- 22) C
- 23) A
- 24) D
- 25) C